

A New Tool to Diagnose Tuberculosis: The Xpert MTB/RIF Assay

What is the Xpert MTB/RIF Assay?

The Xpert MTB/RIF assay is a new test that is revolutionizing tuberculosis (TB) control by contributing to the rapid diagnosis of TB disease and drug resistance. The test simultaneously detects *Mycobacterium tuberculosis* complex (MTC), and resistance to rifampin (RIF) in less than 2 hours. In comparison, standard culture can take 2 to 6 weeks for MTC to grow and conventional drug resistance tests can add 3 more weeks. The information provided by the Xpert MTB/RIF assay aids in selecting treatment regimens and reaching infection control objectives quickly.

How Does the Xpert MTB/RIF Assay Work?

The Xpert MTB/RIF assay is a nucleic acid amplification (NAA) test that uses a disposable cartridge with the GeneXpert instrument system. A sputum sample is collected from the patient with suspected TB. The sputum is mixed with the reagent that is provided with the assay, and a cartridge containing the mixture is placed in the GeneXpert machine. All processing from this point on is fully automated.

What are the Advantages of the Xpert MTB/RIF Assay?

Major advantages of the Xpert MTB/RIF assay are that:

- Results are available quickly, and
 - Minimal technical training is required to run the test.
- Additionally, the Xpert MTB/RIF assay can quickly identify possible multidrug-resistant TB (MDR TB). MDR TB is a TB that is resistant to both isoniazid (INH) and rifampin (RIF), two of the most effective TB drugs. RIF resistance is a predictor of MDR TB because resistance to RIF in most instances, co-exists with resistance to INH. Rapid diagnosis of RIF resistance potentially allows TB patients to start on effective treatment much sooner than waiting for results from other types of drug susceptibility testing.

For patients who are found to have TB disease, rapid results from the Xpert MTB/RIF assay may contribute to cost savings by avoiding unnecessary treatment and respiratory isolation in hospitals or other facilities.

How Should Xpert MTB/RIF Assay Results be Interpreted?

As with other NAA tests, the Xpert MTB/RIF assay should be interpreted along with clinical, radiographic, and other laboratory findings. The Xpert MTB/RIF assay [does not](#) replace the need for smear microscopy for acid-fast bacilli, culture for mycobacteria, and growth-based drug susceptibility testing, in addition to genotyping for early discovery of outbreaks. Provider and laboratory reports to ensure that patient specimens are available for recommended mycobacterial testing.

National Center for HIV/AIDS, STD, and TB Prevention
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